

AUSTRALIAN NEUROPTERA. PART I.

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(Plates lxxii.-lxxv.)

(Communicated by W. W. Froggatt, F.L.S.)

In the following pages, I give some descriptions of new species of Neuropterous insects from Australia, together with notes on other interesting species. No apology is needed for the fact that these notes are accompanied by illustrations and tables, because much of the literature relating to the Neuropterous fauna of Australia is to be found scattered in numerous papers and periodicals; and, for the student, it is, therefore, a great work to find the descriptions, which very often are insufficient, as in most cases they are based on old or mutilated specimens, and are often too short. A good and complete description of an insect is a necessity for an exact determination; but when the description is accompanied by an accurate figure, the work is facilitated to a high degree. Therefore, it is my hope that these, and the following notes, may be of some value in the study of the Australian Neuroptera.

The greater part of the material, here recorded, belongs to Mr. W. W. Froggatt, Government Entomologist of N.S.Wales, to whom my best thanks are due for his kindness in allowing me to examine it. Also my friend, Mr. R. J. Tillyard, has sent me much material for examination, and I am much obliged to him for his kind assistance.

NYMPHIDÆ.

Rambur, Hist. Nat. Ins. Névr., p.412(1842).

No ocelli. Antennæ much shorter than the wings, which are long and slender. Costa and radius united at the tip. Radial sector with several branches. Cubitus forks a little before the tip of first anal vein; its posterior branch short, bent down and running out

into the hind margin. Tibiæ with two spurs at the tip. Areolum large and bifid.

1. Media in both wings unforked..... *Austronymphes*.

Media forked in the forewing, unforked in the hindwing 2.

2. In the forewing, media forks as far out as the origin of the radial sector. Between first anal vein and the hind margin, two rows of cellules..... *Nymphes*.

In the forewing, the media forks much before origin of first branch of radial sector. Between first anal vein and the hind margin, one row of cellules..... *Nesydrion*.

In Trans. Am. Ent. Soc., xxxix., p.212 (1913), Mr. N. Banks describes a genus, *Nymphydron*, including the species *N. delicatum* Bks., from Queensland. I do not know whether this genus belongs to the *Nymphidæ* or to the *Myiodactylidæ*; probably it belongs to the latter family.

AUSTRONYMPHES, gen.nov.

Labrum emarginate with rounded lateral margins and front margin. Maxillary palpi 5-jointed; 1st and 2nd joints short and of equal length; 3rd as long as 1st and 2nd united; 4th two-thirds as long as 3rd; 5th more slender, subcylindrical, as long as 3rd and 4th united; the tip truncate. Labial palpi 3-jointed; 1st joint short, 2nd joint twice as long as 1st; 3rd fusiform, as long as 1st and 2nd united. No ocelli. Basal joint of antennæ very stout; 2nd very short; 3rd twice as long as 2nd; 4th as long as 2nd and 3rd united; 4th and following joints longer than broad. Legs rather slender; tibiæ with two short and almost straight spurs; tarsi shorter than tibiæ. Joints 1-4 diminish successively by small gradations; 5th joint as long as 2nd, 3rd, and 4th united. Puvilli large, subtriangular. Wings long and slender, rather acute at tip; hindwings a little narrower and shorter than the forewings. Costal area narrow; its crossveins simple, but forked from the base of pterostigma. In the subcostal area one or two basal crossveins, beyond them a larger number are indicated by short streaks arising from subcosta, but not reaching radius. Subcosta and radius united at the tip of the pterostigma. Radial sector arises near base of radius; 8 branches from radial sector. Media straight, unforked. Cubitus forks nearly opposite to

origin of first branch of radial sector. First anal runs parallel to cubitus. Between 1st and posterior margin of the wing, one row of cellules in the forewing, two in the hindwing. Second anal short, forked near its tip in the forewing. Third and 4th anals circumscribing a large, inconspicuous, nearly circular cellule in the forewing, and a very small one in the hindwing.

Type: *A. insularis*, sp. nov.

This genus is closely related to *Nymphes*; the most important differences are the peculiar crossveins in the subcostal area, the unforked media in forewing, and the presence of the large, circular cellule at the base of forewing.

AUSTRONYMPHES INSULARIS, sp. nov. (Pl. lxxii., fig. 1).

Head and palpi reddish-yellow; above the base of antennæ a black, transverse streak; from the middle of this streak and downwards to the labrum a blackish median streak. A small blackish spot below each eye. Along the hindmargin of vertex a narrow transverse black streak at each side, and between them a blackish spot. Eyes blackish. The three basal joints of antennæ yellowish, the remainder reddish, shortly blackish-haired [tip of antennæ lost]. Thorax and legs yellowish-red without markings. Abdomen yellowish-red at the base, darker towards the tip; pleuræ with a narrow black streak. Body and legs yellowish-haired. Wings hyaline. Costa and radius reddish-yellow. Subcosta dark brown to blackish. The other nervures and crossveins reddish-brown. Nervures reddish-haired. Pterostigma conspicuous, yellowish-red, enclosing ten forked veins.

Length of body 14 mm.; of forewing 19 mm.; of hindwing 16 mm.

Prince of Wales Island (H. Elgner leg.; one specimen); Coll. Froggatt.

NESYDRION.

Gerstaecker, Mitth. naturw. Ver. Neuvorp. u. Rügen, xvi., p. 47 (1884).

NESYDRION NIGRINERVE, sp. nov. (Pl. lxxii., fig. 2).

Face reddish-yellow. Maxillary palpi yellowish; apical joints reddish towards the tip. Vertex reddish-yellow with trace of some indistinct darker spots along the hind margin.

Antennæ dark brown; the two basal joints reddish-brown. Thorax yellowish, with a broad dark brown longitudinal median streak. Abdomen reddish-brown above, testaceous below. Sides, venter of thorax, and legs yellowish with a faint reddish tinge. Wings hyaline along the tip and apical half part of posterior margin with a brownish tinge. Pterostigma slightly yellowish-marked. Longitudinal nervures blackish-brown except costa, radius, basal half of cubitus, and in the hindwings the anal veins, which are yellowish. All crossveins blackish, very narrowly margined with brown in the basal part of the forewing. At the tip of subcosta a brownish spot, largest in the hindwing.

Length of forewing 30 mm.; of hindwing 27 mm.

Cairns, Queensland, 20.x.1909(W. W. Froggatt leg.); one specimen; Coll. Froggatt.

This species especially differs from *N. fuscum* Gerst., (Pl. lxxii., fig.3) by the hyaline membrane of the wings; and from *N. diaphanum* Gerst., and *N. pallidum* Bks., by the darker nervation of the wings.

APOCHRYSIDÆ.

Handlirsch, Die foss. Ins. u. Phyl. rezent. Formen, p.1251 (1908).

APOCHRYSA.

Schneider, Symb. Mon. Gen. Chrysopæ, p.157(1851).

APOCHRYSA PHANTOMA.

Gerstaecker, Mitth. nat. Ver. Neuorp. u. Rügen, xxv., p.153 (1893).

In Coll. Froggatt, a fine specimen from Aru Islands, 1911 (W. W. Froggatt leg.). The specimen agrees in every point with the description of Gerstaecker; his type-specimen was collected in New Guinea.

Whether *Apochr. phantoma* Gerst., is only a variety of *Apochr. aurifera* Walk., from Ceylon, as v.d. Weele supposes (Notes Leyd. Mus., xxxi., p.84, 1909), I do not propose to dis-

cuss at present ; but probably the number of spots on the wing-disc is liable to variation, which, perhaps, may be due to sexual differences.

OLIGOCHRYSA, gen. nov.

One series of crossveins in the disc—the space between the radial sector and the media—parallel to media in the basal half of the wing, and then bent upwards, forming an S-shaped row, which joins the radial sector. In the disc of the forewing, two rows of cellules before the series of gradate crossveins, one row behind.

Type: *O. gracilis*, sp. nov.

The genus is similar to *Apochrysa*; only the arrangement of the gradate veins in the wing-disc differs. In *Apochrysa* there are at least two series of gradate veins—the crossveins sometimes arranged somewhat irregularly—; in *Oligochrysa* only one series, ending in the radial sector, one-third of the length of the wing from tip.

OLIGOCHRYSA GRACILIS, sp. nov. (Pl. lxxiii., fig. 4).

Head reddish-yellow ; palpi whitish. Antennæ longer than the forewing, brownish-yellow ; the two basal joints with a purplish-red stripe exteriorly in immature specimens ; in the mature specimen, all the basal joints are purplish-red exteriorly. First joint very stout ; second joint smaller, globular. Prothorax a little longer than broad, front angles rounded ; lateral margins with a reddish stripe. Thorax and abdomen pale reddish-brown ; metathorax with two indistinct reddish spots ; the abdomen with indistinct reddish spots laterally. Legs yellowish-white ; claws darker. Wings hyaline ; iridescent. All veins testaceous except the upper end of the crossveins between radius and its sector together with the inner gradate series, which are blackish-brown. In the forewing, two brown dots, a larger oblong one enclosing the posterior crossveins in the inner gradate series, and a smaller one enclosing the last but one of the crossveins between radius and its sector. In the hind-wing, there is only the corresponding spot present, but it is

smaller. The crossveins in the outer gradate series, in the forewing, greyish-brown. The tip of the upper branches of some of the marginal forks in the posterior-apical part of fore- and hindwing blackish. The forewings with rounded tip, twice and one-half as long as broad.

Length of forewing and hindwing, 19-20 mm.

Brisbane, 25.v.1912(H. Hacker leg.; one specimen, immature); Coll. Tillyard.—Middle Queensland (one specimen, mature), in Coll. Petersen.

CHRYSOPIDÆ.

Newman, Zoologist xi., App. CC.(1853).

NOTHOCHRYSA.

MacLachlan, Trans. Ent. Soc. Lond., p.195(1868).

NOTHOCHRYSA FROGGATTI, sp. nov. (Pl.lxxiii., fig.5).

Head reddish-yellow; palpi yellow. Antennæ at least as long as the forewing, brown with narrow yellow annulations, becoming yellowish towards the apex; basal joint reddish-yellow, very stout; 2nd and 3rd joints much smaller, reddish-yellow, the third with a small brown transverse streak dorsally at its base. Prothorax at least twice as broad as long; front angles cut off, reddish-yellow with two broad lateral purplish streaks; each of them encloses two small yellowish spots, one in the middle, the other nearer the base. Meso- and meta-thorax yellowish, with two narrow oblique purplish streaks at each side. Abdomen yellowish, dorsally at each side with a longitudinal, oblique, purplish streak often abrupted, on the front half of each segment and behind with a more or less distinct purplish spot. Venter of body and legs pale yellow; claws dark brown with a broad, blunt dent basally. Wings hyaline, all the nervures reddish-brown except costa, subcosta, radius and partly the cubitus. Pterostigma yellowish. Forewing 29 mm.; hindwing 26 mm.

Solomon Islands, July-August, 1909 (W. W. Froggatt leg., one female); Coll. Froggatt.